Astrophysics

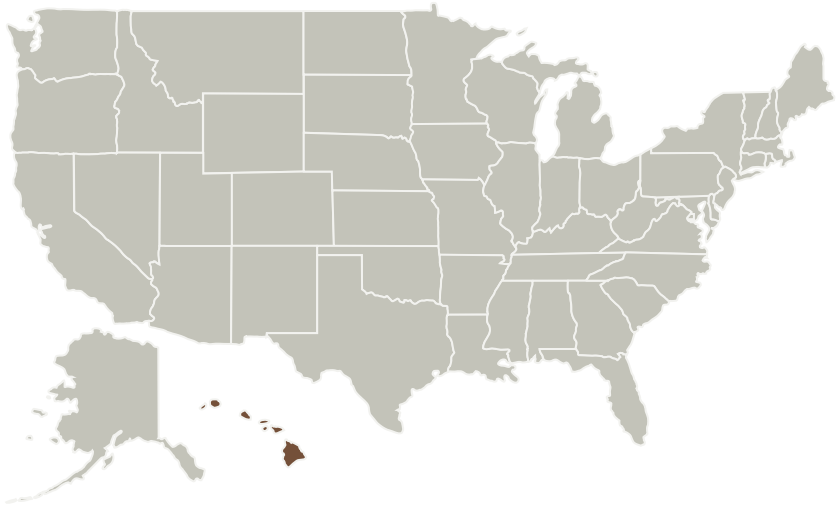
Search for cosmic ultra-high energy neutrinos with ANITA-IV

Completed Technology Project (2016 - 2017)

Project Introduction

The ANITA long-duration balloon payload is designed to search for radio pulses associated with interactions of cosmic ultra-high energy neutrinos in the Antarctic ice sheets. Neutrinos are the only other stable fundamental particles, along with photons, whose directions be traced directly back to their sources without significant deflection or energy loss. By successfully determining the trajectories of observed impulsive radio signals from the ice, ANITA offers the possibility of neutrino astronomy at the highest possible energies. This includes sources such as ultra-high energy cosmic rays which outside the 50-100 MPc range of the local epoch are otherwise expected to be opaque to conventional photometric methods. Detecting at an energy regime not probed by other similar projects, each iteration of the ANITA project provides insights and improved understanding of limitations on the observability of the universe.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
University of Hawaii Maui College	Supporting Organization	Academia Asian American Native American Pacific Islander (AANAPISI)	Kahului, Hawaii

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Organizational Responsibility

Responsible Mission Directorate:

Science Mission Directorate (SMD)

Responsible Program:

Astrophysics

Project Management

Program Manager:

Joe Hill-kittle

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Primary U.S. Work Locations
Hawaii

Project Management *(cont.)*

Principal Investigator:

Peter W Gorham

Co-Investigators:

John W Russell
Georgette S Sakumoto

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.8 Warm Gas

Target Destination

Outside the Solar System